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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,832	04/09/2004	Rajiv K. Grover	200402482-1	1395

22879 7590 01/08/2008		EXAMINER
HEWLETT PACKARD COMPANY		WILSER, MICHAEL P
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INTELLECTUAL PROPERTY ADMINISTRATION		
FORT COLLINS, CO 80527-2400		

ART UNIT	PAPER NUMBER
2195	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	**Application No.**	**Applicant(s)**
	10/821,832	GROVER ET AL.
	Examiner	**Art Unit**	
	Michael Wilser	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after t he mailing date of this com munication, even if timely filed, may re duce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>09 April 2004</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-24</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-24</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>09 April 2004</u> is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a) ☐ All b) ☐ Some * c) ☐ None of:

   1. ☐ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____.

   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>4/9/04</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1-24 are pending in this application.

Drawings

2.   The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5)

because they include the following reference character(s) not mentioned in the

description: 440a and 440b in Figure 4. Corrected drawing sheets in compliance with

37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in

the description in compliance with 37 CFR 1.121(b) are required in reply to the Office

action to avoid abandonment of the application. Any amended replacement drawing

sheet should include all of the figures appearing on the immediate prior version of the

sheet, even if only one figure is being amended. Each drawing sheet submitted after the

filing date of an application must be labeled in the top margin as either "Replacement

Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by

the examiner, the applicant will be notified and informed of any required corrective

action in the next Office action. The objection to the drawings will not be held in

abeyance.

Specification

3.   The disclosure is objected to because of the following informalities: the examiner

notes the use of acronyms (e.g. LUN, etc.) throughout the specification without first

including a description in plain text, as required.

Appropriate correction is required

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly
claiming the subject matter which the applicant regards as his invention.

5.   Claims 1-24 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

A. The following terms lack antecedent basis:

(i) the queue depth – Claims 1, 6, 11, and 20

(ii) the service queue depth – Claim 19

B. The following claim language is indefinite:

(i) Claims 1 and 11, the use of acronyms "LUN" (i.e. logical unit number) throughout the claims without first including a description in plain text, as required.

(ii) Claims 1 and 6, line 2, it is uncertain what is meant by "a computer process" (i.e. to <u>perform</u> a computer process).

(iii) Claim 1, lines 6 and 8, it is not clearly indicated what the relationship is between "host port LUN configured" and "host port connection" (i.e. the host port must be configured first before it can be connected to the storage device?).

(iv) Claim 11 has the same deficiencies as Claims 1 and 6 above.

(v) Claim 20, limes 2-3, it is uncertain what the relationship is between the "storage network" and the "at least one storage device" (i.e. storage network includes plurality of storage devices?).

Claim Rejections - 35 USC § 101

6.   35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7.   Claims 1-10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 1-10 are drawn to a computer program product, which the applicant has defined in the specification (page 24, paragraph 70, line 5) to encompass an electronic transmission signal. The Office considers an electronic signal to be a form of energy. · Energy is not a series of steps or acts and this is not a process. Energy is not a physical article or object and as such is not a machine or manufacture. Energy is not a combination of substances and therefore not a compilation of matter. Thus, an electronic transmission signal does not fall within any of the four categories of invention. Therefore, Claims 1-10 are not statutory.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 1-2, 4, 6-7, 9, 11-14, 16-17, 20-21, and 23-24 are rejected under 35

U.S.C. 103(a) as being unpatentable over Hinton et al. (US 2003/0037187) in view of

Tawil (US 6,421,723)

10.   Tawil was cited on IDS filed on 4/9/04.

11.   As per Claim 1, Hinton teaches the invention substantially as claimed including a

computer program product encoding a computer program for executing on a computer

system a computer process comprising:

        a. identifying a plurality of storage devices to be configured in a storage network

(140, Figure 1 & page 3, paragraph 23, lines 1-7 & paragraph 24, lines 1-3);

        b. identifying a number of host port LUNs configured on each of the storage

devices (page 3, paragraph 24, lines 7-19);

        c. identifying a number of host port connections to the storage devices (page 3,

paragraph 24, lines 6-11); and

        d. for each host port connection, determining actual loading for each of the

storage devices for each of the LUNs (page 4, paragraphs 26 & 27).

12.   However, Hinton does not explicitly disclose that determining the actual loading

is based in part on the queue depth. However, Tawil disclose a system in which queue

depth is taken into consideration when determining actual loading (abstract, lines 19-

21).

13.   It would have been obvious to one of ordinary skill in the art at the time of

invention to have used the queue depth calculation of Tawil's system in Hinton's

invention. One would have been motivated to use the queue depth to determine actual

loading since the amount of work waiting on the host to connection to complete would

be dependent upon the number of resources waiting for the host connection.

14.   As per Claim 2, Hinton further discloses determining actual loading for each of

the storage devices based at least in part on a number of host groups in the storage

network (page 3, paragraph 24).

15.   As per Claim 4, Hinton further discloses using a loading factor to determine if the

actual loading for each of the storage devise exceeds a maximum loading (page 4,

paragraph 26).

16.   As per Claim 6, Hinton teaches the invention substantially as claimed including a

computer program product encoding a computer program for executing on a computer

system a computer process comprising:

         a. identifying a plurality of storage devices to be configured in a storage network

(page 3, paragraph 23);

b. identifying a number of host port connections to the storage devices (page 3, paragraph 24); and

c. for each for each host port connection, determining actual loading for each of the storage devices for each of the LUNs (page 4, paragraph 26).

And, Tawil discloses that queue depth is taken into consideration when determining actual loading time (abstract, lines 19-21).

17.   As per Claim 7, it is rejected for the same reason as Claim 2 above.

18.   As per Claim 9, it is rejected for the same reason as Claim 4 above.

19.   As per Claim 11, Hinton teaches the invention substantially as claimed including a method of device loading in a storage network comprising:

a. configuring a storage device in the storage network with a plurality of host port LUNs (page 3, paragraph 24);

b. automatically determining actual loading for the storage device for each host port LUN (page 4, paragraph 26); and

c. accepting the storage device configuration if the actual loading for the storage device is no more than a maximum loading for the storage device (page 4, paragraph 26).

And, Tawil discloses of identifying a queue depth for each taken into consideration when determining actual loading time (abstract, lines 19-21).

20.   As per Claim 12, Hinton further discloses determining actual loading for the

storage device is also based at least in part on a number of host paths connected to the

storage device (page 3, paragraph 24).

21.   As per Claim 13, Hinton further discloses determining actual loading for the

storage device port is also based at least in part on a number of LUNs configured for

the storage device (page 3, paragraph 24).

22.   As per Claim 14, it is rejected for the same reason as Claim 2 above.

23.   As per Claim 16, Hinton further discloses determining actual loading for a

plurality of backend LUNs connected to the storage device (page 3, paragraph 24).

24.   As per Claim 17, Hinton further discloses determining actual loading for a

plurality of storage device in the storage network (page 3, paragraph 23).

25.   As per Claim 20, Hinton teaches the invention substantially as claimed including

a method of device loading in a storage network comprising:

        a. configuring the storage network with a plurality of host port connections to at

least one storage device (page 3, paragraph 23); and

    b. for each of a plurality of host port connections to the at least one storage

device, determining the actual loading of the at least one storage device of each host

port connection (page 4, paragraph 26).

    And, Tawil discloses that queue depth is taken into consideration when

determining actual loading time (abstract, lines 19-21).

26.   As per Claim 21, it is rejected for the same reason as Claim 2 above.

27.   As per Claims 23-24, they are rejected for the same reason as Claims 16-17

above.

28.   Claims 3, 5, 8, 10, 15, 18-19, and 22 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Hinton et al. (US 2003/0037187) and Tawil (US 6,421,723) as

applied to claims 1, 6, 11, and 20 above, and further in view of Nahum (US

2004/0078599).

29.   As per Claim 3, Hinton and Tawil do not explicitly disclose of determining actual

loading based at least in part on a number of LUN security groups. However, Nahum

discloses a system in which LUN security groups are used (page 2, paragraph 18).

30.   It would have been obvious to one of ordinary skill in the art at the time of invention to have had the LUN security groups of Nahum's system in Hinton and Tawil's invention. One would have been motivated to have LUN security groups because they would allow for greater reliability in assuring that all of the devices were in the storage network legally and not taking into account component that are not part of the network in calculating loading times.

31.   As per Claim 5, Nahum further discloses the computer process further simplifies host groups and LUN security groups into virtual connections for analysis (page 2, paragraph 18).

32.   As per Claim 8, it is rejected for the same reason as Claim 3 above.

33.   As per Claim 10, it is rejected for the same reason as Claim 5 above.

34.   As per Claim 15, it is rejected for the same reason as Claim 3 above.

35.   As per Claim 18, Nahum further discloses the maximum loading for the storage device is based on a loading factor (page 7, paragraph 85).

36.   As per Claim 19, Nahum further discloses the loading factor is in the range of the service queue depth for the storage device (page 7, paragraph 85).

37.   As per Claim 22, it is rejected for the same reason as Claim 3 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Wilser whose telephone number is (571) 270-1689. The examiner can normally be reached on Mon-Fri 7:30-5:00 EST (Alt Fridays Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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MPW
December 17, 2007

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